Opportunity Title: The Origin of Modified Optical Properties of Natural and Experimental Space-Weathered Materials
Opportunity Reference Code: 0005-NPP-NOV23-JSC-Interdisc

Organization National Aeronautics and Space Administration (NASA)

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Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description Space weathering is a term used to include all of the processes that act on material exposed at the surface of a planetary or small body. In the case of the Moon, it includes a variety of processes that have formed the lunar regolith, caused the maturation of lunar soils, and formed patina on rock surfaces. The processes include micrometeorite impact and reworking, implantation of solar wind and flare particles, radiation damage and chemical effects from solar particles and cosmic rays, interactions with the lunar atmosphere, and sputtering erosion and deposition. Understanding these effects is critical in order to fully integrate the lunar sample collection with remotely sensed data from recent robotic missions (e.g., Lunar Prospector, Clementine, Galileo). A major objective of this research is to analyze lunar breccias for evidence of preserved space weathering effects in component grains and clasts. The main research techniques include optical and electron microscope analysis for chemical compositions, mineralogy, and petrography. In addition to the lunar breccia studies, parallel research will be undertaken on gas-rich meteorite breccias, interplanetary dust particles, and experimental analogues using the same suite of analytical techniques in order to understand space-weathering effects on chondritic materials.

Location:
Johnson Space Center
Houston, Texas

Field of Science: Interdisciplinary/Other

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Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.